

Claims

1. A guide wire for use in a surgical or other procedure for accessing a remote site in the body of a human or animal subject, the guide wire defining a longitudinally extending axis, and terminating at one end in a proximal portion, and at an opposite
5 end in a distal portion for accessing the remote site, the distal portion terminating adjacent a distal end thereof in a guide portion, the guide portion being adapted to be shaped to a desired curved configuration for facilitating guiding of the guide wire into a branched vessel of the subject, characterised in that a reinforcing means is provided on the distal portion for minimising axial twisting of the distal portion
10 between a proximal end of the distal portion and the guide portion thereof.
2. A guide wire as claimed in Claim 1 characterised in that the reinforcing means is an elongated reinforcing means having a proximal end and a distal end.
- 15 3. A guide wire as claimed in Claim 2 characterised in that the reinforcing means extends along at least a portion of the distal portion between the proximal end of the distal portion and the guide portion.
4. A guide wire as claimed in Claim 2 or 3 characterised in that the distal end of
20 the reinforcing means is spaced apart from the distal end of the distal portion of the guide wire and defines with the distal end of the distal portion of the guide wire the guide portion thereof.
5. A guide wire as claimed in any of Claims 2 to 4 characterised in that the
25 reinforcing means extends from the proximal end of the distal portion.
6. A guide wire as claimed in Claim 5 characterised in that the proximal end of the reinforcing means substantially coincides with the proximal end of the distal portion of the guide wire.
- 30 7. A guide wire as claimed in any of Claims 2 to 6 characterised in that the reinforcing means extends in a generally axial direction.

8. A guide wire as claimed in any of Claims 2 to 7 characterised in that the distal portion of the guide wire defines a longitudinally extending flat surface, and the reinforcing means extends along the flat surface and from the flat surface
5 terminating in a longitudinally extending edge.

9. A guide wire as claimed in Claim 8 characterised in that the distal portion of the guide wire is of rectangular transverse cross-section defining a pair of opposite major flat surfaces, joined by a pair of opposite minor surfaces, the major flat
10 surfaces defining a central major plane located midway between the major surfaces, and the minor surfaces defining a central minor plane located midway between the minor surfaces.

10. A guide wire as claimed in Claim 9 characterised in that the reinforcing
15 means is located on one of the major flat surfaces.

11. A guide wire as claimed in Claim 9 or 10 characterised in that the reinforcing means is located on both of the major flat surfaces.

20 12. A guide wire as claimed in any of Claims 9 to 11 characterised in that the respective major flat surfaces converge towards each other towards the distal end of the distal portion.

25 13. A guide wire as claimed in any of Claims 9 to 12 characterised in that the transverse distance of the longitudinally extending edge of each reinforcing means from the central major plane is substantially constant along the reinforcing means.

14. A guide wire as claimed in any of Claims 9 to 13 characterised in that each reinforcing means extends parallel to the central minor plane.
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15. A guide wire as claimed in any of Claims 9 to 14 characterised in that each reinforcing means coincides with the central minor plane.

16. A guide wire as claimed in any of Claims 9 to 13 characterised in that each reinforcing means extends at an angle greater than zero degrees to the central minor plane.

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17. A guide wire as claimed in any of Claims 9 to 13 characterised in that each reinforcing means extends adjacent one of the minor surfaces.

18. A guide wire as claimed in any of Claims 9 to 13 characterised in that one reinforcing means extends from each of the major flat surfaces, one of the reinforcing means extending adjacent one of the minor surfaces, and the other reinforcing means extending adjacent the other minor surface.

19. A guide wire as claimed in any of Claims 2 to 18 characterised in that each reinforcing means comprises an elongated reinforcing member.

20. A guide wire as claimed in Claim 19 characterised in that each reinforcing member defines opposite longitudinally extending sides.

21. A guide wire as claimed in Claim 20 characterised in that the opposite longitudinally extending sides of each reinforcing member terminate along the longitudinally extending edge thereof.

22. A guide wire as claimed in Claim 20 or 21 characterised in that the opposite longitudinally extending sides of each reinforcing member are parallel to each other.

23. A guide wire as claimed in Claim 20 characterised in that the opposite longitudinally extending sides of each reinforcing member converge towards the longitudinally extending edge thereof for defining the longitudinally extending edge as a longitudinally extending ridge.

24. A guide wire as claimed in any of Claims 19 to 23 characterised in that the

longitudinally extending edge of each reinforcing member converges towards the distal portion adjacent the distal end of the reinforcing member.

25. A guide wire as claimed in any preceding claim characterised in that each
5 reinforcing means is integrally formed with the distal portion.

26. A guide wire as claimed in any preceding claim characterised in that each
reinforcing means and the distal portion are of metal and are formed by forging from
a single piece of metal.

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27. A guide wire as claimed in any preceding claim characterised in that each
reinforcing means and the distal portion are of metal and are formed by rolling from a
single piece of metal.

15 28. A guide wire as claimed in any preceding claim characterised in that the
distal portion of the guide wire extends through a sleeve, and a first securing means
at the distal end thereof secures the distal portion to the sleeve, the first securing
means defining the distal end of the guide wire.

20 29. A guide wire as claimed in Claim 28 characterised in that the first securing
means is shaped to form a dome shaped distal end for facilitating passage of the
guide wire smoothly through a vessel of the subject.

30. A guide wire as claimed in Claim 28 or 29 characterised in that the guide
25 portion is located between each reinforcing means and the first securing means.

31. A guide wire as claimed in any of Claims 28 to 30 characterised in that the
first securing means comprises a solder joint.

30 32. A guide wire as claimed in any of Claims 28 to 30 characterised in that the
first securing means comprises an adhesive joint.

33. A guide wire as claimed in any of Claims 28 to 30 characterised in that the first securing means comprises a brazed joint.

5 34. A guide wire as claimed in any of Claims 28 to 32 characterised in that the sleeve extends beyond the proximal end of the distal portion along a portion of the guide wire.

35. A guide wire as claimed in any of Claims 28 to 34 characterised in that a proximal end of the sleeve is secured to the guide wire by a second securing means.

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36. A guide wire as claimed in Claim 35 characterised in that the second securing means comprises one of an adhesive joint, or a solder joint, or a brazed joint.

15 37. A guide wire as claimed in any of Claims 28 to 36 characterised in that the sleeve is secured to the guide wire at at least one intermediate location intermediate the proximal end and the distal end of the sleeve by an intermediate securing means.

20 38. A guide wire as claimed in Claim 37 characterised in that the intermediate securing means comprises one of an adhesive joint, a solder joint, or a brazed joint.

39. A guide wire as claimed in any of Claims 28 to 38 characterised in that at least a portion of the sleeve adjacent the distal end thereof is of a radiopaque material.

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40. A guide wire as claimed in any of Claims 28 to 39 characterised in that the sleeve comprises a tightly wound coiled spring of a metal material.

30 41. A guide wire as claimed in any of Claims 28 to 40 characterised in that the sleeve comprises a tubular member.

42. A guide wire as claimed in Claim 41 characterised in that the tubular member is of plastics material.

43. A guide wire as claimed in Claim 41 or 42 characterised in that the sleeve is
5 formed from alternate portions of the tightly wound coiled spring and the tubular member.

44. A guide wire as claimed in any of Claims 28 to 43 characterised in that at
least a portion of the sleeve is formed from one or more of the following materials or
10 alloys thereof:
 platinum,
 gold,
 tantalum.

15 45. A guide wire as claimed in any preceding claim characterised in that the guide wire is substantially torsionally rigid between the distal portion and the proximal portion of the guide wire for minimising axial twisting of the guide wire between the proximal portion thereof and the guide portion.

20 46. A guide wire as claimed in any preceding claim characterised in that a portion of the guide wire adjacent the distal portion thereof tapers towards the distal portion.

47. A guide wire as claimed in any preceding claim characterised in that the
distal portion of the guide wire and the guide wire are integrally formed from one
25 piece of material.

48. A distal portion for a guide wire of the type for use in a surgical or other
procedure for accessing a remote site in the body of a human or animal subject, the
guide wire defining a longitudinally extending axis, and the distal portion having a
30 proximal end and a distal end, the proximal end of the distal portion being adapted for securing to the guide wire, the distal portion terminating in a guide portion adjacent the distal end thereof, the guide portion being adapted to be shaped to a

desired curved configuration for facilitating guiding of the guide wire into a branched vessel of the subject, characterised in that a reinforcing means is provided on the distal portion for minimising axial twisting of the distal portion between a proximal end of the distal portion and the guide portion thereof.

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49. In combination a catheter and the guide wire as claimed in any of Claims 1 to 47.